Fairfax County VIRGINIA

GIS Excellence Awards

COUNTY OF FAIRFAX
1742
VIRGINIA

November 17, 2011

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AGENDA

1. **Opening Introduction**

   Gordon Jarratt
   Enterprise Systems Division Director, Department of Information Technology

2. **Featured Speakers**

   Sharon Bulova
   Chairman of the Board of Supervisors, County of Fairfax Virginia

   Wanda Gibson
   Director of the Department of Information Technology & Chief Technology Officer

   Tom Conry
   GIS & Mapping Services Branch Manager

3. **Presentation of Awards**

   Sharon Bulova, Wanda Gibson, & Tom Conry

4. **Closing**

GIS Excellence Awards

November 17th, 2011

The use of GIS technologies in the County has led to the work that you see posted in the Map Gallery and honored here at the GIS Excellence Awards.

As part of the GIS Day celebrations, the GIS Excellence Awards are given annually for outstanding uses of GIS technology by Fairfax County employees and agencies. The awards were created to recognize and celebrate those County employees and agencies which are effectively and innovatively using GIS technology. This year, over 45 submissions were received for the seven categories of recognition.

The awards have two categories recognizing individual and/or team accomplishments and five categories recognizing agency accomplishments. The following page lists the categories and their descriptions.

The awards were determined by a judging panel which included representatives from the George Mason University Department of Geography and the Northern Virginia Community College GIS Certificate Program.

2011 GIS Excellence Award Categories

Individual/Team Categories

FIRST, SECOND, AND THIRD PLACE AWARDS FOR EACH CATEGORY

Best GIS Cartographic Product/Presentation

This award is intended to showcase the power of GIS tools in creating accurate, instructive, and visually-pleasing maps. Criteria used to evaluate the entries include:

- clarity of purpose and intent
- success in clearly explaining spatial concepts
- visual balance and appeal
- inclusion of necessary map elements and conventions

Best Use of GIS for Analysis

This award is intended to showcase the power of GIS tools in undertaking sophisticated spatial analyses that aid County operations and answer significant questions. Criteria used to evaluate the entries include:

- complexity of analysis
- ingenuity of GIS methods for answering analytical questions
- project benefits to a team or department
- effective demonstration of the information and insight gained (e.g., diagrams, maps, presentations, reports, text)

Agency Categories

ONE AWARD PER CATEGORY

Best Use of GIS on the Web

- Presented to the agency that best demonstrates GIS interactivity, maps, and/or data on the internet or County intranet

Best Use of GIS for Public Outreach

- Presented to the agency that best utilizes GIS to serve the public with map documents, customer service operations, press relations, or public events

Most Significant Data Contributor

- Presented to the agency that has been the most influential in creating or refining spatial data for the County

Best GIS Integration or Application Development

- Presented to the agency that has incorporated GIS into their operations to the greatest degree and/or has created a significant GIS software application

Most Significant Progress

- Presented to the agency that has shown the greatest improvement in their use of GIS over the past year

List of All Excellence Award Entries

GIS Cartographic Product/Presentation

Lake Fairfax Sustainable Natural Trail System– Liz Cronauer, Buddy Rose; FCPA
Drug Related Arrests and Felony Charge Disparity on Fairfax County Properties, 2010– Jessica LeBlanc; FCPD - CAU
Residential Service Levels of Public Parkland in Fairfax County– Jay Rauschenbach; FCPA
Driving while Under the Influence - 21 months of DWI Impact in Fairfax County– Brandi Horita; FCPD
Locating New Dog Parks– Jay Rauschenbach; FCPA
Hydrant Coverage Study– Eric Fisher; F&R
Tysons Corner Overview– Scott Sizer; OCRR
Riverbend Trails– Buddy Rose; FCPA
MS4 Service Area Distribution– Keith Appler; DPWES - MSMD
Pipe Rehabilitation Projects– Lisa Miller, Chip Galloway; DPWES - MSMD
Sea Level Rise (hypothetical)– Chip Galloway; DPWES - MSMD
2011 Emerald Ash Borer Trapping Project– Frank Finch; DPWES - UFD
Woodglen Lake Dam Breach– Chip Galloway; DPWES - MSMD
Private Well Yields– Adrian Joye; HD

Use of GIS for Analysis

County Park & Ride License Plate Survey– Thomas Wampler, Mike Demmon, Byren Lloyd, Richard Wood; FCDOT
Drive-Time Service Area Model– Jay Rauschenbach; FCPA
Residential Service Levels of Public Parkland in Fairfax County– Jay Rauschenbach; FCPA
Activity Analysis for Directed Patrol Resource Allocation, McLean District– Brandi Horita; FCPD
Creating Fire Boxes & Determining Dispatch Order– Keg Good; F&R
Hydrant Coverage Study– Eric Fisher; F&R
FCHCD Properties, Neighborhood and Community Services Community & Senior Centers– Diane Jenkins; FCHCD
Impervious Surfaces- Chip Galloway; DPWES - MSMD
Huntsman Lake - Projected Maximum Flood– Chip Galloway, Radwan Idris, Lathan Dennis, DPWES - MSMD
Lake Barton - Maximum Flood– Chip Galloway; DPWES - MSMD
Food Insecurity in Fairfax County– Anne Cahill, Komail Khaja; NCS - Demographics
Land Cover & Hydrologic Soil Acreage Estimation– Keith Appler, Catie Torgersen, Chad Crawford; DPWES - MSMD
Medically Underserved Population Assessment– Adrian Joye, Christina Stevens; HD

Use of GIS on the Web

DPZ website– Department of Planning & Zoning
Lake Fairfax Kiosk Map– Fairfax County Park Authority

Use of GIS for Public Outreach

Fairfax County Active Zoning Applications Map– Department of Planning & Zoning
Fairfax County Park & Ride Brochure– Department of Transportation
Youth Distracted Driving– Police Department
Frying Pan Park Map– Fairfax County Park Authority
Food Insecurity in Fairfax County– Department of Neighborhood & Community Services—Demographics Branch
2011 Redistricting– Office of Public Affairs, Electoral Board, Neighborhood and Community Services, Office of the County Attorney, Human Resources
Report to County BOS - Tyson's– Office of Community Revitalization and Reinvestment, Department of Planning & Zoning

Significant Data Contributor

Flood Hazards– Police Department—Operation Services Branch
Creating Fire Boxes & Determining Dispatch Order– Fire & Rescue Department
Multispectral Tree Coverage & Surface Mapping– Department of Public Works & Environmental Services—Urban Forest Management Branch
MS4 Outfall Initiative– Department of Public Works & Environmental Services—Stormwater Management Branch

GIS Integration or Application Development

Tysons Corner Development Portal– Department of Planning & Zoning
Lake Fairfax Kiosk Map– Fairfax County Park Authority
WebEOC Mapper Common Operating Picture– Office of Emergency Management
Cell Phone Coverage Users Map– Police Department

Significant Progress

Department of Planning & Zoning
Department of Information Technology
Housing and Community Development

Best GIS Cartographic Product/Presentation

Individual/Team Awardees

Third Place

Private Well Yields

Adrian Joye

Department of Health, Environmental Health Division

A tool for analysis of possible groundwater resources in undeveloped areas of Fairfax County, this map allows staff to assess and relay information about potential well yield to developers and other interested parties. The map effectively shows current well locations and the geostatistically derived estimates of potential yield for sections of the County without water utility service. A clean design and map insets of focus supported an efficient and visually appealing product.

Second Place

Driving While Under the Influence - 21 Months of DWI Impact in Fairfax County

Brandi Horita

Fairfax County Police Department, Operations Support Bureau

This map demonstrates the significant impact that driving under the influence of alcohol (DWI) has had in Fairfax County. It displays a 21-month period of DWI crash activity and the location of fatal crashes. The map will be used to support various outreach efforts on the consequences and dangers of driving while under the influence, and it is also appropriate for use by any agency wanting to address intoxicated driving. The color scheme was designed for easy viewing, and the graduated marker symbols for crashes provide viewers with a quick visualization of crash concentrations in any given area. The combination of the map and a facts text section enables the project to either be a standalone product or an accompaniment to a verbal presentation.

First Place

Sea Level Rise!

Chip Galloway

Public Works & Environmental Services, Stormwater Maintenance Branch

Using a worst case scenario of sea level rise due to climatological warming, this map demonstrates how a 200 foot rise in sea level elevation would change the landscape of Fairfax County (thousands of years into the future). The map clearly demonstrates the profound change that would occur in Fairfax County by showing the land and subaqueous terrain elevations and a radically new coastline. A variety of text, graphs, and inset maps demonstrate the historical change in sea level, the source of future potential sea level rise, and how much of southeast Fairfax County would be underwater.

Best Use of GIS for Analysis

Individual/Team Awardees

Third Place

Medically Underserved Population Assessment

Adrian Joye, Chris Stevens

Health Department, Environmental Health Division

The primary purpose of this series of maps was to assist the Health Department in identifying communities that meet the federal definition of "medically underserved". Designating these areas as medically underserved would allow the County to pursue federal funding to develop the resources necessary to improve access to primary care. Criteria that were used for this assessment included: percentage of the population below poverty level, clients seeking prenatal care through one of the county facilities, and clients seeking primary health service through the Fairfax County Community Health Network (CHCN). Geocoded address data from over 32,000 maternity and CHCN clients were used along with American Community Survey (U.S. Census) income data. Maps were created for the Bailey's Crossroads, Herndon/Reston, and Mount Vernon region to visually display census tracts that may be experiencing access barriers to health care services.

Second Place

Lake Barton - Maximum Flood

Chip Galloway

Public Works & Environmental Services, Stormwater Maintenance Branch

While maintaining consistency with cartographic products of the past, this product used Stormwater Planning cross section studies to show which buildings would be inundated in a worst-case flood event. Elevation contours indicate the path of water rise, and the many buildings in the Lake Barton flood zone are symbolized in red for easy identification.

First Place

Food Insecurity in Fairfax County

Anne Cahill, Komail Khaja

Neighborhood & Community Services, Demographics Branch

This analysis was undertaken to help identify the County's food insecure residents (persons who have limited or uncertain availability of nutritionally adequate and safe foods) and to determine their geographic patterns. This information will be used by schools, county agencies, and non-profit organizations to better plan and locate programs addressing food insecurity. Data from multiple organizations were extracted from various systems, collected, geocoded and analyzed. In addition to basic density maps, several advanced tools were used as part of this analysis: Client data was analyzed using the Kernel Density tool to identify the highest densities of households as hotspots, and a Service Area analysis was also performed to determine the proportion of food requesters who are located within a walkable one-mile route of a food distribution site.

Best Use of GIS on the Web
Agency Winner

Department of Planning & Zoning Website (www.fairfaxcounty.gov/dpz)

Department of Planning and Zoning

Greg Chase, Allison Clark, Harry Rado, Daniel White

DPZ has focused on making its website increasingly user-friendly by providing quick access to important, relevant, and timely information to the public by incorporating GIS technology and data throughout its site. For aiding development review, the Fairfax County Active Zoning Applications Interactive Map provides a geographic view of applications under review by DPZ. A GIS server is used to create an interactive map of active zoning cases that are linked to Land Development System information and staff reports for active zoning cases. In the Environmental section of the site, the team created a GIS-generated County-wide map by Supervisor District that shows the location of agricultural and forestry districts throughout the County. As part of the County's Area Plan Review (APR) of the Comprehensive Plan Process, the team developed GIS-generated clickable maps to access individual nominations. As part of DPZ's historic preservation efforts, the team utilized GIS to create a map that depicts the County's historic districts and the *Inventory of Historic Sites Map*. DPZ also maintains the History Commission website on which it developed a *Historical Roadside Markers Map* via the use of GIS-generated clickable maps for navigation. As a partner in the *Transforming Tysons Corner* website, DPZ maintains the *Interactive Portal Map* to provide an interactive geographic view of Tysons Corner zoning cases under review. These examples of the incorporation of GIS capabilities into the DPZ website demonstrate how GIS has bolstered the efficiency of staff while also making current DPZ information both easily accessible and transparent to the public.

Best Use of GIS for Public Outreach
Agency Winner

Youth Distracted Driving Crash Map

Police Department

Brandi Horita

Used by local media outlets (WTOP, ABC 7), the Youth Distracted Driving crash map presentation was designed to capture the attention of parents/caretakers and encourage them to take a strong stance on ensuring the safe driving habits of their children. Lack of experience and a fondness for mobile devices combine to make adolescents an especially at-risk population of drivers. This project exhibits vehicle crashes where a distracted youth driver was involved. Boxes surrounding the map highlight issues such as roles and responsibilities, the effects of distractions, and youth vulnerability. A chart was also incorporated to denote the number of crashes shown geographically on the map and to list the various actions of youth drivers just prior to being involved in a collision.

Most Significant Data Contributor
Agency Winner

Creating Fire Boxes and Determining Dispatch Order
Fire and Rescue Department
Keg Good

The Fairfax County Fire and Rescue Department divides the county into small service areas called fire boxes. These polygons serve as a geographical reference for responders and 911 dispatchers, as well as providing a framework for the analysis of historical incident data, the prediction of trends, and the modeling of future scenarios. Major infrastructure changes such as new fire stations and roads have a significant impact on how fire boxes are shaped. A new fire station at Dulles Airport and a change in the character of an existing road necessitated the creation of new fire boxes and altering existing ones. Designing fire boxes and deriving dispatch orders is a multi-step process. First, a dispatch order is calculated for each street segment. A dispatch order is a ranking of all fire stations by their travel time to that segment. Streets with the same dispatch order in the first three positions are grouped together. Next, parcels, addresses, and non-traditional access points are reviewed to determine a fire box that best reflects each collected group of streets. Once finalized, a final dispatch order is exported from GIS and then reformatted for loading into the County's CAD (Computer-Assisted Dispatch) system for use in 911 responses to emergency incidents.

Best GIS Integration or Application Development
Agency Winner

Lake Fairfax Kiosk Map
Park Authority
Buddy Rose, Liz Crounauer

The park staff at Lake Fairfax requested a map to be posted in an outdoor kiosk. The Park Authority wanted to show trail users all of the trails around the park that may be combined to form a loop and connect to other locations such as, Colvin Run Mill, The Cross County Trail, and The Washington & Old Dominion Railroad Trail. Budget constraints disallowed posting the map regularly along the trails, so the Park Authority utilized a *Quick Response* (QR) matrix barcode that can be easily scanned into a smartphone. Using a common smartphone application, the code directs a user to a website that displays the map on their phone screen.

Most Significant Progress
Agency Winner

Comprehensive Plan Amendment Database
Department of Planning & Zoning
Kim Rybold, Brandy Holstein, Meghan Van Dam, Harry Rado

Recently, DPZ has been doing a lot of housekeeping with regard to their Comprehensive Plan GIS files. Over the past twenty years, several amendments to the Comprehensive Plan have been made through Special Studies, Board-authorized Plan amendments, and the Area Plans Review (APR) process. While GIS map layers were created over the years for visual mapping purposes, they did not contain any attribute information about individual amendments and were not stored in a centralized location. As a result, it has not been possible to use these files to perform analysis of the location and type of Plan amendments over time.

Over the past year, DPZ has mapped or consolidated nearly 1,400 Plan amendments into one centralized location. Additionally, attribute information was added for each of these Plan amendments, enabling DPZ to map amendments based on purpose, status, adoption number, and supervisor district. This newly organized Plan amendment database has been immensely helpful as DPZ has begun its APR Retrospective process. To examine the effectiveness of the APR process through the Retrospective, DPZ has solicited the input of community groups, supervisors, and planning commissioners. Last spring, DPZ visited each supervisor's office, presenting a collection of maps for each district that analyzed locations and types of past Plan amendments. With these maps, patterns were identified within and between various supervisor districts regarding where and what kind of Plan changes have been proposed, as well as where Plan changes related to land use and development intensity have been adopted. At the conclusion of the individual supervisor meetings, DPZ presented a final compilation of these maps to the Policies and Procedures Committee of the Planning Commission. These maps were greatly received by supervisors and planning commissioners, allowing them to get a clear sense of the planning history within their districts. This, in turn, increased the level of awareness of DPZ's use of GIS among supervisors and planning commissioners.

Encouraged by these meetings, DPZ is striving to put the finishing touches on this database early next year, allowing for publication to the GIS enterprise database server. Along with a Comprehensive Plan map update, DPZ plans to publish this data online in an interactive format that will allow the public to have a clearer understanding of land use and changes that have occurred over time.